A Comparative Study to Assess Knowledge of the Health Impact of Menstrual Cup Versus Sanitary Pad Use Among Teenage Girls in Selected Institutions at Coimbatore

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***Abstract*—Menstrual hygiene is essential to adolescent girls' health. Menstrual cups and sanitary pads are commonly used menstrual hygiene products, each having different characteristics related to usage, hygiene, safety, and health impact. The present study was conducted to assess and compare the knowledge regarding the health impacts of menstrual cup and sanitary pad use among teenage girls in selected institutions at Coimbatore. A quantitative, non-experimental, descriptive-comparative research design was adopted. The study was conducted among 100 teenage girls aged 17–20 years, comprising 50 menstrual cup users and 50 sanitary pad users. A non-probability convenience sampling technique was used to select the participants. Data were collected using structured knowledge questionnaires consisting of 33 multiple-choice questions for each group. The collected data were analyzed using descriptive and inferential statistics, including frequency, percentage, mean, standard deviation, independent-samples t-test, and Chi-square test. The findings revealed that 56% of menstrual cup users had adequate knowledge, while 44% had moderately adequate knowledge. Among sanitary pad users, 76% had adequate knowledge, and 24% had moderately adequate knowledge. Mean knowledge scores were 26.08 ± 3.49 among menstrual cup users and 27.90 ± 3.26 among sanitary pad users. The mean knowledge scores differed significantly between the two groups (t = 2.694, df = 98, P = 0.008). A significant association was found between knowledge level and religion among menstrual cup users (P = 0.042). No significant association was found with other selected personal and menstrual characteristics. The study concluded that although the majority had adequate knowledge, a considerable proportion had only moderately adequate knowledge even though students were from medical background. Therefore, regular menstrual health education programs are needed to improve awareness regarding the safe use, hygiene, benefits, and possible health impacts of menstrual cups and sanitary pads.**

***Index Terms*—Knowledge, menstrual cup, sanitary pad, health impact, teenage girls**

I. INTRODUCTION

Menstruation is a normal part of adolescent life, but it requires accurate knowledge and proper hygiene. Menstrual hygiene includes using clean menstrual products, changing or cleaning them at appropriate intervals, washing hands before and after handling products, maintaining genital hygiene, and disposing of used materials safely. Poor menstrual hygiene can cause itching, rashes, foul odor, skin irritation, and reproductive or urinary tract infections. In a study of 450 adolescent girls in Jammu and Kashmir, 71.7% knew that unhygienic menstrual practices increase the risk of genital infection (Bhat et al., 2022).

Various products are used to manage menstrual flow, including sanitary pads, reusable cloth pads, tampons, menstrual cups, and menstrual discs. Sanitary pads are external absorbent products worn inside underwear, whereas menstrual cups are reusable internal devices made of medical-grade silicone that collect menstrual blood in the vagina. Each product has distinct advantages, limitations, and hygiene requirements. Evidence indicates that menstrual cups are safe when used and maintained properly and offer a sustainable alternative to disposable products (Beksinska et al., 2021; Behera et al., 2024).

Sanitary pads are widely used because they are easy to use and do not require insertion. However, they should be changed every 4–6 hours to prevent moisture buildup, skin irritation, foul odor, and infection. Disposable pads also require proper disposal, as improper disposal contributes to environmental pollution and drainage problems. In an Odisha-based study, 86.9% of participants used sanitary pads. Commonly reported menstrual health problems included itching (70.4%), irritation (17.2%), and skin rashes (12.4%). The study also highlighted concerns regarding cost, shame, and improper disposal (Rath et al., 2025).

Teenage girls often receive limited or inaccurate information about menstruation and menstrual products from family members, friends, social media, or advertisements. This can lead to misconceptions, poor hygiene practices, anxiety, and difficulty selecting an appropriate menstrual product. In Jaipur, only 48.7% of adolescent girls had a correct understanding of menstruation, and 55.1% of menstruating girls reported menstrual-related health problems in the previous six months (Sharma et al., 2024). Therefore, assessing teenage girls' knowledge of the health impacts of menstrual cup and sanitary pad use is important for promoting safe, hygienic, and informed menstrual health practices.

1.1 Need for the study

This study is needed because menstrual hygiene is a major adolescent health issue, yet teenage girls often have limited, incomplete, or myth-based knowledge about the health effects of menstrual products. The researchers have undertaken this study because existing evidence shows that teenage girls predominantly use sanitary pads, while their knowledge about menstrual cups and the comparative health impacts of both products remains inadequate. In India, sanitary pads are the most common menstrual product, but menstrual-cup adoption is very low. One study found that 87.8% of teenage and reproductive-age women used pads, whereas only 0.61% used a menstrual cup, and 73.7% had never heard of one (Sreeja et al., 2023)

Although sanitary pads are widely used, concerns such as leakage, rashes, discomfort, and improper changing or disposal practices continue to be reported. At the same time, menstrual cups may offer a reusable and potentially healthier alternative, but their use is limited by insufficient knowledge, myths, fear of insertion, lack of parental or peer support, and social stigma. The researcher therefore aims to assess and compare teenage girls' knowledge of the health impacts of menstrual cup and sanitary pad use. The findings can help nurses, teachers, and health educators develop targeted awareness programs, correct misconceptions, promote safe menstrual practices, and support informed choice of menstrual products

1.2 Objectives

- To assess the level of knowledge of health impacts among teenage girls who use menstrual cups.
- To assess the level of knowledge of the health impacts among teenage girls who use sanitary pads.
- To compare the level of knowledge of health impacts among teenage girls who use menstrual cups versus sanitary pads.
- To associate the level of knowledge of health impacts among teenage girls who use menstrual cups with selected demographic variables.
- To associate the level of knowledge of health impacts among teenage girls who use sanitary pads with selected demographic variables.

1.3 Hypothesis

H1: There will be a significant difference in the mean knowledge scores of health impacts between menstrual cup users and sanitary pad users

II. REVIEW LITERATURE

Studies related to knowledge regarding menstrual cups

Mahendra et al. (2026) conducted a community-based cross-sectional study to assess knowledge, awareness, myths, and acceptability of menstrual cups among adolescent girls in Nagamangala Taluk, Karnataka. The study, conducted from February to April 2026, included 812 adolescent girls aged 13–19 years. Participants were selected using simple random sampling, and data were collected using a pretested semi-structured questionnaire. The findings showed that 37.9% were aware of menstrual cups, 42.1% had adequate knowledge, and 57.9% had inadequate knowledge. Myths and misconceptions were reported by 61.3% of participants. Among misconceptions, 44.6% feared pain during insertion, 37.4% believed menstrual cups affected virginity, 32.8% believed the

cup could get stuck, and 23.1% feared infection. However, 67.5% expressed willingness to use menstrual cups. A statistically significant association was found between awareness and age ($\chi^2 = 9.82$, $P = 0.002$). Adequate knowledge was significantly associated with higher acceptability ($\chi^2 = 14.7$, $P < 0.001$), whereas myths and misconceptions were significantly associated with lower willingness to use menstrual cups ($\chi^2 = 41.6$, $P < 0.001$). The study concluded that awareness and knowledge regarding menstrual cups were inadequate among adolescent girls, while acceptability was relatively high. The researchers recommended structured menstrual health education programs to improve knowledge, reduce misconceptions, and promote the acceptance of menstrual cups among adolescent girls.

Studies related to knowledge regarding sanitary pads

Gupta et al. (2025) conducted a community-based cross-sectional study to assess menstrual hygiene practices and their determinants among adolescent girls in selected urban slums of Datia, Madhya Pradesh, India. The study aimed to assess menstrual hygiene practices and determine their association with selected socio-demographic and knowledge-related factors. A total of 400 adolescent girls aged 10–19 years were selected using a multistage random sampling technique. Data were collected using a pretested, interviewer-administered questionnaire, and the findings were analyzed using descriptive statistics, chi-square tests, and multivariate logistic regression. The results revealed that 82.0% of the adolescent girls used sanitary pads, 61.5% changed their absorbents three or more times daily, 47.0% used soap for genital hygiene, and 56.0% followed safe disposal practices. School absenteeism during menstruation was reported by 37.5% of the participants.

Regarding awareness, 57.5% had knowledge about menstruation before menarche, while 42.5% had no prior awareness. Mothers were the primary source of information (43.0%), followed by friends (21.0%), teachers (14.0%), and the media or the internet (12.0%). A statistically significant association was found between good menstrual hygiene practices and maternal education ($\chi^2 = 22.18$, $P < 0.001$), availability of private toilet facilities ($\chi^2 = 14.27$, $P < 0.001$), and awareness before menarche ($\chi^2 = 10.14$, $P = 0.001$). The study concluded that menstrual hygiene practices among adolescent girls were influenced by maternal education, prior awareness, and sanitation facilities. The researchers recommended menstrual health education programs, improved sanitation facilities, and increased awareness among adolescent girls and mothers to promote safe menstrual hygiene practices

Studies related to the comparison of menstrual cup and sanitary pad usage

Van Eijk et al. (2021) conducted a systematic review and meta-analysis to assess the use, acceptability, safety, effectiveness, and cost of reusable menstrual pads among adolescent girls and women internationally. The review included 44 studies involving approximately 14,800 participants from 20 countries. Relevant studies were identified through databases such as PubMed, Cochrane Library, Web of Science, MEDLINE, CINAHL, and Google Scholar. The findings were analyzed using descriptive statistics and random-effects meta-analysis.

The results showed that 78% of the studies were conducted in low- and middle-income countries, while 20% were conducted in refugee settings. Use of reusable menstrual pads ranged from 22% to 100% in 12 cohort studies, with a median uptake of 90% at follow-up. A study conducted in Uganda found that menstrual blood leakage was significantly lower among reusable menstrual pad users (44.4%) than among cloth users (78%, $P < 0.001$). Regarding safety, skin irritation among reusable menstrual pad users was reported by 23.8% after three months, compared with 72.8% at baseline when disposable pads were used. The findings also showed that 44% to 91% of participants in five studies considered reusable menstrual pads easy to clean.

However, difficulties related to washing, drying, privacy, and water availability were reported. The review also indicated that reusable menstrual pads were more economical and environmentally friendly than disposable menstrual products over long-term use. The study concluded that reusable menstrual pads were an acceptable, potentially safe, and cost-effective alternative for menstrual hygiene management. The researchers recommended further high-quality studies and appropriate menstrual health education to promote the safe use of reusable menstrual products among adolescent girls and women.

III. MATERIALS AND METHODS

Research Design

A non-experimental, comparative, descriptive research design was adopted.

Study Setting

The study was conducted at selected institutions of the RVS Group of Institutions in Sulur, Coimbatore, which includes College of Nursing, Physiotherapy, Pharmaceutical Sciences, and Ayurveda College.

Study Population

The study population comprised teenage girls aged 17–20 years who were enrolled. The sample consisted of 100 teenage girls who met the inclusion criteria.
Group I: Menstrual cup users
Group II: Sanitary pad users

Sample Size

The sample included 100 teenage girls who met the inclusion criteria.

Sampling Technique

A nonprobability convenience sampling technique was used to select 100 teenage girls from the selected institutions.

Inclusion Criteria

- Were aged 17–20 years.
- Had attained menarche.
- We're studying in the selected institutions.
- We're willing to participate in the study

Exclusion Criteria

- Had menstrual abnormalities.
- We're unwilling to participate or withdrew their consent.
- Were absent during the data collection period.
- Were unable to complete the questionnaire.

Data Collection Procedure

A total of 100 teenage girls who fulfilled the inclusion criteria were selected using a non-probability convenience sampling technique. Informed consent was obtained from the participants before data collection. The participants were classified into two groups based on the menstrual product they were currently with the structured knowledge questionnaire regarding menstrual cups, whereas the sanitary pad users were provided with the structured knowledge questionnaire regarding sanitary pads. Each questionnaire consisted of 33 multiple-choice questions related to the respective menstrual product. The participants were instructed to read the questions carefully and select the appropriate answers. The completed questionnaires were collected, and confidentiality and anonymity were maintained throughout the study.

Ethical Considerations

Formal permission was obtained from the relevant institutional authorities before conducting the study. The purpose of the study was explained to the participants, and informed consent was obtained before data collection. Participation was voluntary, and participants were informed of their right to withdraw from the study at any time. Confidentiality and anonymity were maintained throughout the study. Collected information was coded and used only for research purposes.

IV. RESULTS

Table 1: Comparison of level of knowledge among teenage girls using menstrual cups and sanitary pads

Level of knowledge	Menstrual cup (N=50)		Sanitary pad (N=50)	
	Frequency	Percentage	Frequency	Percentage
Inadequate knowledge	0	0.0	0	0.0
Moderately adequate knowledge	22	44.0	12	24.0
Adequate knowledge	28	56.0	38	76.0

Interpretation:

The findings showed that a higher percentage of teenage girls using sanitary pads (76.0%) had adequate knowledge than those using menstrual cups (56.0%).

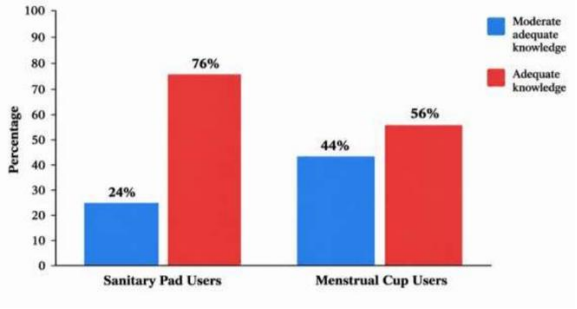


Figure 1 presents the percentage distribution of level of knowledge among sanitary pad users and menstrual cup users

Table 2: Comparison of mean knowledge score and standard deviation between menstrual cup users and sanitary pad users, and its level of significance.

Group	M Maximum score	Mean score	Mean score (%)	Mean Difference	Standard deviation	Unpaired t value df = 98
Menstrual cup users	33	26.08	79.03	1.82	3. 49	t = 2.694 * P = 0.008
Sanitary pad users	33	27.9	84.55		3.26	

*Significant at P<0.05

Interpretation:
The findings indicated that sanitary pad users had significantly higher mean knowledge scores than menstrual cup users. Therefore, the research hypothesis H1 was accepted, and the null hypothesis was rejected.

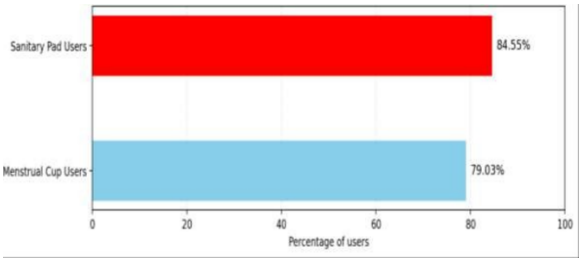


Figure 2 presents the comparison of mean knowledge score in percentage between sanitary pad users and menstrual cup users.

V. DISCUSSION

The present study found that 56.0% of teenage girls using menstrual cups and 76.0% using sanitary pads had adequate knowledge of their respective menstrual products and related health impacts. The mean knowledge score among sanitary pad users (27.90 ± 3.26) was significantly higher than that of menstrual cup users (26.08 ± 3.49), with an unpaired t value of 2.694 (P = 0.008). These findings indicate that sanitary pad users had higher knowledge scores than menstrual cup users. These results were consistent with Tiwari and Archana (2023), who reported that 54.0% of nursing students had adequate knowledge and practices regarding sanitary pad use and disposal. Similarly, Madi et al. (2024) reported that only 3.33% of adolescent girls had adequate knowledge regarding menstrual cups to improve menstrual cup awareness. However, the present study showed a higher proportion of adequate knowledge among menstrual cup users than the findings of Madi et al. (2024). These differences may be related to variations in the study population, prior exposure to menstrual health information, and the knowledge assessment tools used.

VI. CONCLUSION

The present study found that most teenage girls in both the menstrual cup (56%) and sanitary pad (76%) groups had adequate knowledge, while 44% in the menstrual cup group and 24% in the sanitary pad group had only moderately adequate knowledge, even though students were from a medical background. Sanitary pad users also had significantly higher mean knowledge scores than menstrual cup users (P = 0.008). Among menstrual cup users, religion was significantly associated with knowledge, whereas no significant associations were observed with other selected personal and menstrual characteristics in either group. This indicates that studying in a medical-related institution alone does not ensure complete knowledge about menstrual hygiene and the health impact of menstrual products. Therefore, knowledge should be improved through regular health education programs, awareness activities, and demonstrations focused on the correct use, benefits, possible health problems, and safety measures related to both menstrual cups and sanitary pads. These efforts help

teenage girls build awareness and make informed decisions about menstrual hygiene.

VII. IMPLICATIONS

- The study's findings indicate that nearly half of teenage girls using menstrual cups and about one-fourth of those using sanitary pads had not achieved an adequate level of knowledge about the health impacts of the menstrual products they used.
- Nursing students should receive adequate education about menstrual cups and sanitary pads, including their benefits, proper use, safety, and possible health problems
- Nursing administrators should encourage nurses and nursing students to organize regular menstrual hygiene awareness programs in schools and colleges.
- Nurse researchers should conduct further studies on knowledge, attitudes, and practices regarding menstrual cups and sanitary pads among adolescent girls.

RECOMMENDATIONS

- A similar study can be conducted with a larger sample in different educational institutions.
- An experimental study can be conducted to assess the effectiveness of a structured teaching program regarding menstrual hygiene products.
- A comparative study can be conducted among teenage girls in rural and urban areas.

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